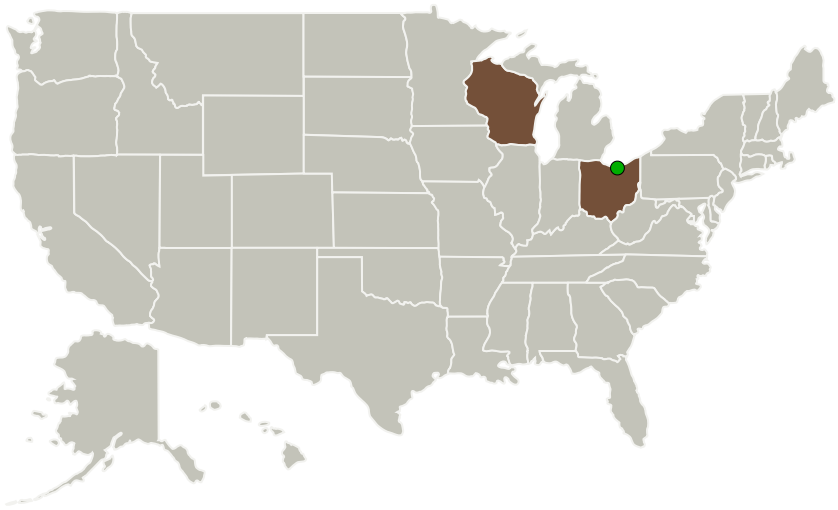
Miniature Nontoxic Nitrous Oxide-Propane (MINNOP) Propulsion, Phase I

Completed Technology Project (2014 - 2014)

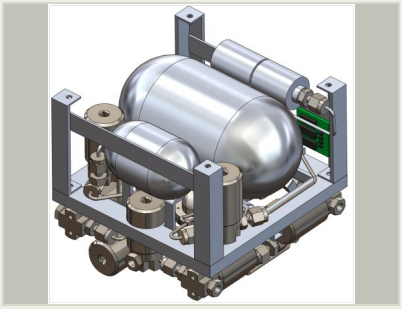
Project Introduction

ORBITEC proposes to develop the Miniature Nontoxic Nitrous Oxide-Propane (MINNOP) propulsion system, a small bipropellant propulsion system which we offer as an alternative to miniature hydrazine monopropellant thrusters for CubeSat-class spacecraft. As compared to state-of-the-art hydrazine systems, MINNOP propulsion will provide significant increases in specific impulse (in bipropellant mode) and comparable levels of minimum impulse bit (in cold gas mode), and it will do so with a nontoxic, environmentally benign, self-pressurizing set of propellants. In Phase I, we will focus on demonstrating the operation of the bipropellant thrust chamber, and ignition of that chamber within appropriate weight constraints. Our preliminary propulsion system design is intended to occupy 1U of a 3U-size CubeSat.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Sierra Nevada Corporation(SNC)	Lead Organization	Industry Women-Owned Small Business (WOSB)	Sparks, Nevada
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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Primary U.S. Work Locations	
Ohio	Wisconsin

Project Transitions

June 2014: Project Start

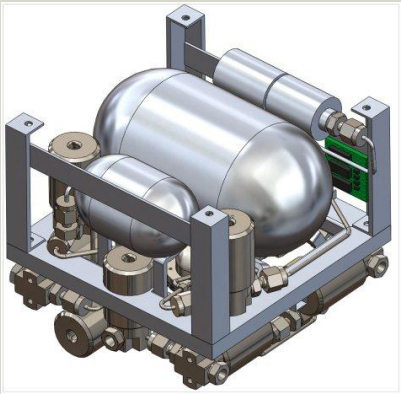
December 2014: Closed out

Closeout Summary: Miniature Nontoxic Nitrous Oxide-Propane (MINNOP) Propulsion, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/137536)*

Images



Briefing Chart Image
Miniature Nontoxic Nitrous Oxide-Propane (MINNOP) Propulsion, Phase I
(https://techport.nasa.gov/image/127734)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Sierra Nevada Corporation (SNC)

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

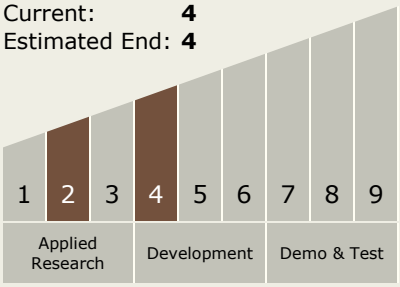
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Christopher P Stclair

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Completed Technology Project (2014 - 2014)

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.4 Solids

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System